

Is pediatric ophthalmology a popular subspecialty in India: Present scenario and future remedies

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Purpose: The aim of the study was to assess the attitude and perceptions of residents regarding Pediatric Ophthalmology and Strabismus (POS) subspecialty training. We also explored the possible barriers and solutions to promoting POS in India. **Methods:** A questionnaire consisting of 20 items, with a 5-point Likert scale, was provided to all postgraduate residents of Ophthalmology in the year 2013–2014. Semistructured interview of a selected panel of experts was carried out to understand the challenges, barriers, and opportunities for developing POS subspecialty in India. The data collected were coded and statistically analyzed using standard methods for quantitative and qualitative data. **Results:** Out of 81 residents, 69 responded (85.2%). The mean age of the respondents was 27.5 ± 1.23 years. Forty eight (69.0%) residents reported that there was no structured surgical teaching and systematic periodic posting in this subspecialty during their residency program. Residents who stated difficulty to understand the subject were 59%. Pursuing POS as a career choice was indicated by 21.0%. Major attracting attributes of POS fellowship were intellectual stimulation (69.7%) and independent operative skills (57.5%). Dissuading factors were difficulty to handle children (54.5%) and stress factor (48.4%). Expert views were grouped under four domains, such as doctor–patient ratio, infrastructure, training opportunities, utilization, and accessibility to POS services. **Conclusion:** The study has provided useful insights into the preferential behavior among trainee resident doctors and reasons for not choosing POS as a possible choice of future fellowships.

Key words: Pediatric ophthalmology, strabismus, subspecialty fellowship, survey

Childhood blindness is one of the priorities in “Vision 2020: the right to sight.” Globally, 19 million children below 15 are visually impaired, and 1.4 million are irreversibly blind.^[1] Most of them live in Asia and Africa, and 75% of all causes of childhood blindness are preventable or curable.^[2] The estimated prevalence of childhood blindness/low vision in India is 0.80 per thousand people.^[3,4]

The problems affecting children are different from those that affect adults, and managing them requires teams with specialized skills serving in well-equipped pediatric ophthalmology service centers. As per the World Health Organization, we need one of these centers for every 10 million people, with at least one specialty trained or oriented ophthalmologist available.^[5] At present, India has 69 centers that amount to 1 per 18.6 million people.^[6] This means we still have a deficit of 59 centers in the country. Moreover, most of these are urban based, making them inaccessible to most people in need.

The pediatric ophthalmology subspecialty is still in its infancy in India.^[4,6] There is a dearth of infrastructure and trained staff to treat preventable blindness among children, and the need to train more and more ophthalmologists in this subspecialty has never been so urgent. Currently, only 11

pediatric ophthalmology subspecialty training centers in India provide learning opportunities to aspiring ophthalmologists in this field.^[4,6] Most of these are privately funded institutions. Each year, only 28–30 Pediatric Ophthalmology and Strabismus (POS) fellows are trained at these institutions. Hence, India needs to expand its capacity to train and simultaneously encourage more postgraduate (PG) residents to apply for POS training in existing facilities.

There are few studies that try to understand what factors play a key role in PGs residents choosing subspecialty training as a future career. We, therefore, decided to study the attitude and perception of PG residents in eastern India toward pediatric ophthalmology and the factors determining their career choices in this subspecialty. We also explored the possible barriers and solutions to promoting POS in India.

Methods

This was a cross-sectional study carried out among all the Ophthalmology residents studying (MS/Diplomate of the National Board [DNB]) in one of the states of eastern India, between January 2013 and June 2014. This included three state

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government medical colleges, three private medical colleges, and two private tertiary eye care institutes.

A survey tool was designed specifically for this study after consultation with experts and adapted from similar tools developed earlier for other specialties elsewhere.^[7-13] In this tool, there were 28 questions organized into three sections. The first section was designed to collect personal information, demographic data, career plans, and POS subspecialty experience of the resident doctors. In the second, their interests and perceptions of the POS subspecialty were studied using a 20-item Likert scale with options of strongly agree, agree, neutral, disagree, and strongly disagree. Questions were designed to understand their degree of interest to deal with children, perceived lifestyle (working hours, income, and job market), and attitude toward research and surgical management of pediatric cases. In the third section, they had to select three features that would attract them and three features that would dissuade them from pursuing a career in POS.

The questionnaire was first validated by two independent researchers, and a pilot trial was conducted for a week in the first author's institute. The study patients were contacted through their respective departmental heads for voluntary participation in this exercise through e-mail in 2013. A reminder was sent after 3 months. We observed all the ethical principles as prescribed under Indian Council of Medical Research during the conduct of the study.^[14]

We also carried out a semistructured interview of four carefully selected experts in the field of pediatric ophthalmology (professors and senior consultants) from different parts of the country after obtaining their approval by e-mail in early 2014. Their responses were sought to improve our understanding of various issues. These included their perceptions of the need for enhancing the requirement for trained workforce in the country, reasons for deficiency of POS trained doctors in public health facilities, various reforms that could help retain POS in public sector, ways to improve POS training and service-related infrastructure, various challenges faced by them in delivering POS-related services, means to improve accessibility to POS care among those who were needy, and finally, the factors they thought could be important for PGs in choosing POS as a subspecialty in India.

Quantitative data were entered into the Excel 2007 and analyzed using SPSS 21.0 (SPSS Inc., LL, USA). Categorical data were summarized using proportions. Scores were summarized using means. Qualitative data were analyzed using standard techniques. A conceptual diagram was prepared based on this analysis to reflect the views of the expert group.

Results

We had participation from all six medical colleges and two private tertiary eye care institutes of the state with a response rate of 85.2% (69/81). The mean age of the respondents was 27.5 years (standard deviation = 1.23 years, range: 25–30 years), most of them being female (56.0%) and married (52.6%) during their residency training. The majority of residents (59.4%) preferred a combination of academic and private practice, while 8.7% wanted to immediately start their private practice. There was a preference for urban-based practice in 69% of the residents. Fifty-two residents (75.4%) expressed their desires to enroll in one of the subspecialty fellowship programs after their residency.

With regard to exposure to pediatric ophthalmology, the majority (69.0%) acknowledged the absence of structured surgical teaching and periodic posting in the subspecialty during their residency program due to the nonexistence of trained faculty, and this demotivated 23% of the residents from pursuing the specialty as a career option. Twelve residents (17.4%) had the privilege to work under a trained POS faculty in one particular government institute for 4 months.

The 20-Likert scale items were analyzed to assess the factors that might affect a resident's interest in POS and to pursue this subspecialty as described in Tables 1 and 2. The PG residents found POS to be a prestigious branch (100%), intellectually intriguing (71.0%), interesting (59.0%), enjoyable (27.0%), financially productive (60.0%), and with some scope for research and academic growth (60.0%). While 41 residents (59.4%) felt that the working hours were likely to be unpredictable, 63% disagreed that this would interfere with their family life. Sixty-two residents (90.0%) agreed on the fact that ocular examination in children was difficult and required a lot of patience and hard work (86.0%). Opinion about the

Table 1: Resident's perception and facilitating factors likely to affect the decision to pursue pediatric ophthalmology and strabismus fellowship training

Survey questions	Strongly agree, n (%)	Agree, n (%)	Neutral, n (%)	Disagree, n (%)	Strongly disagree, n (%)
Facilitating factors for taking up POS					
Being a pediatric ophthalmologist is prestigious	14 (20)	55 (80)	0	0	0
I enjoy the pediatric ophthalmology clinic	1 (1)	18 (26)	46 (67)	4 (6)	0
I like strabismus	1 (1)	40 (58)	22 (32)	6 (9)	0
Research in pediatric ophthalmology is interesting	4 (6)	36 (52)	29 (42)	0	0
Pediatric ophthalmology is intellectually intriguing	4 (6)	45 (65)	20 (29)	0	0
I liked all the pediatric ophthalmologists that I have worked with	3 (4)	47 (68)	19 (28)	0	0
Financial health					
Pediatric ophthalmology has a good job market	4 (6)	29 (42)	31 (45)	5 (7)	0
Practice in favor of POS					
I plan to do a fellowship in pediatric ophthalmology	1 (1)	14 (20)	49 (71)	5 (7)	0

n: Number of respondents, POS: Pediatric ophthalmology and strabismus

Table 2: Resident's perception and dissuading factors in pursuing pediatric ophthalmology and strabismus fellowship training

Survey questions	Strongly agree, n (%)	Agree, n (%)	Neutral, n (%)	Disagree, n (%)	Strongly disagree, n (%)
Barriers in choosing the field					
I have had a clinical role model in pediatric ophthalmology	3 (4)	18 (26)	26 (38)	22 (32)	0
Limited exposure in this field has demotivated me from specializing in this field	1 (1)	15 (22)	49 (71)	4 (6)	0
Pediatric patients are difficult to examine	5 (7)	57 (83)	6 (9)	1 (1)	0
Depending on general anesthesia for surgery and the risk factor makes me uncomfortable	0	24 (35)	13 (19)	31 (45)	1 (1)
I do not have a systematic teaching for strabismus surgery	1 (1)	47 (68)	20 (29)	1 (1)	0
I had adequate exposure to pediatric ophthalmology during my residency	0	0	20 (29)	40 (58)	9 (13)
Pediatric ophthalmology colleagues do not appeal to me	0	11 (16)	52 (75)	6 (9)	0
Lot of hard work and patience is expected	4 (6)	55 (80)	10 (14)	0	0
Structured approach of this subject must be emphasized more in the PG curriculum	11 (16)	56 (81)	2 (3)	0	0
Interference with social life					
Unpredictable long working hours	3 (4)	38 (55)	16 (23)	12 (17)	0
A career in pediatric ophthalmology would interfere with my family responsibilities	0	0	25 (36)	43 (62)	1 (1)
Financial health					
Income and private practice is difficult in this subspecialty	0	18 (26)	17 (25)	30 (43)	4 (6)

n: Number of respondents, PG: Postgraduate

necessity of having a clinical role model was fairly divided (i.e., 30.0% agreed, 38.0% were neutral, and 32.0% disagreed).

The most commonly cited attributes of POS fellowship that attracted residents to this field included prestige (80.0%), intellectual stimulation (71.0%), research interest (58%), and job opportunities (48.0%). The common perceptions among the residents that dissuaded them from pursuing this subspecialty were difficulty in examining children (90.0%), hard work and patience (86.0%), inadequate exposure in POS (71.0%), and unpredictable working hours (59.0%) [Table 2]. Fifteen residents (21.7%) planned to pursue a fellowship in POS after completion of residency, while 71.0% were neutral in their response and 7.0% were not interested in joining this stream.

We sought expert opinion about the status of POS in India, and the findings have been presented under four headings [Fig. 1].

In regard to doctor-patient ratio, a huge gap was being perceived considering the rising trends in childhood blindness. Existing doctors were primarily available in urban locations, yet not fully accessible due to the lack of awareness among the general public about their utility. Thus, trained POS doctors were additionally being utilized by their employers to serve adult patients, which is a huge opportunity cost. At present, very few POS doctors are working in public sector, that too with fixed remuneration patterns and without performance-based incentives. This could possibly induce a preference for less time-consuming, technically simple surgical procedures, such as adult cataracts, which in turn could hurt the development of POS as a subspecialty in the public sector. At the policy level too, much emphasis was on prevention of blindness due to cataracts, and most of the funds were being utilized for this purpose. Contrary to this, the private sector permits more

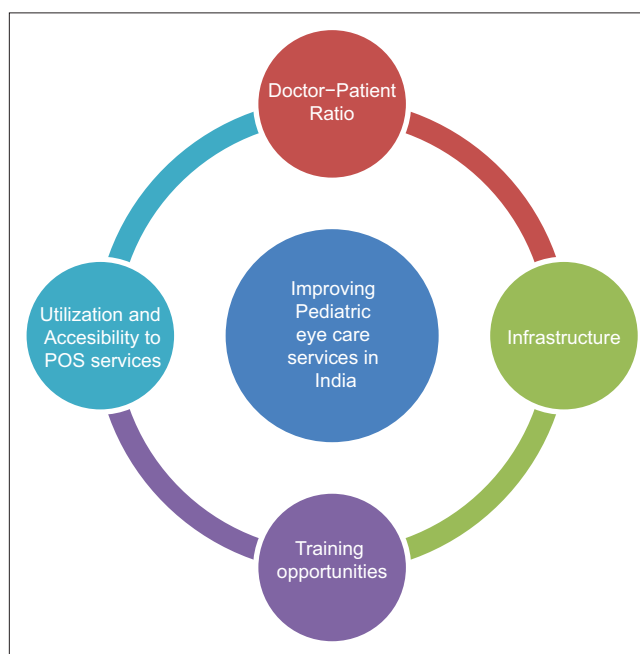


Figure 1: Conceptual diagram depicting improvement in four key domains as prerequisite in improving pediatric eye care services in India

freedom at work, availability of skilled team for POS, supply of equipment, and better financial returns for the amount of work put by the specialists. These factors further compromise access for the poor population in our country.

With regard to infrastructure, experts felt the need for planning workforce requirement based on representative community-based surveys of childhood ocular morbidity.

Further, strong policy decisions were required to create well-equipped independent units with improved work culture and child-friendly atmosphere, autonomy in decision-making, attractive remuneration schemes for the team, and dedicated funding to setup pediatric ophthalmology departments in public health facilities at different levels. Performance-based indicators could be developed to monitor care in POS. Trained support staff such as orthoptists, nurses, and counselors were required to make the parents less apprehensive and more aware of various childhood ocular diseases. Team work with anesthesiologist and pediatrician was essential to deal with emergencies. Besides, low visual rehabilitation setup with child psychologist and physiotherapist was also essential to provide holistic care to patients.

With respect to training opportunities, there are hardly any public institutions at present that offer POS fellowships. This requires scaling up. There was a lack of standardized training program across centers, lack of common curriculum goals, or clearly defined minimum exit competencies. It was felt that the time was right to expand the scope of discipline beyond strabismus and address emerging areas such as glaucoma, retinopathy of prematurity, ptosis, and ocular oncology. Experts also acknowledged the fact that POS currently was not a popular choice among ophthalmology resident doctors, which they thought could be due to poor training opportunities, lack of mentors, inexperience in handling children, fear factor for strabismus surgery, inclination toward relatively less demanding cataract procedures, a perception of poor income, and slow-paced technological innovations in the field.

Finally, with regard to utilization and accessibility to POS services, experts perceived that most pediatric cases still presented late to the POS specialist, and follow-up was usually very poor. Parents were reluctant when it came to consenting to strabismus surgeries for their children. Facilities were mostly urban. It is necessary to devise strategies to improve referrals by general ophthalmologists, pediatricians, as well as primary care providers. It is also necessary to create more awareness about POS among the local community and primary care providers to devise means to improve access and utilization of services in schools and outpatient clinics, besides creating learning opportunities in POS for residents in ophthalmology departments.

Discussion

Good residency training is the backbone of Indian ophthalmology and is crucial to the delivery of quality eye care services to the population. In India, medical graduates can pursue a PG degree (MD/MS) for 3 years or a PG diploma for 2 years. A statutory body, the Medical Council of India, regulates both these courses. In addition, they can undergo specialized training by working at any accredited institutions for 3 years and then appear for an examination conducted by a statutory body (the National Board of Examinations), which awards a DNB of Ophthalmology.^[15]

A national survey by Murthy *et al.*^[15] reported that nearly 900 ophthalmologists are trained in India every year. Conventionally, PG medical education is administered through public and private funded medical colleges which are based on conventional facilities. Exposure to all surgical procedures other than cataract is inadequate in most institutions. POS fellowships are being offered by 0.9% PG institutes as compared

to 8.7% in diplomate training institutes.^[15] Another study by Grover^[16] observed that ophthalmology training was mostly “cataract orientated” with limited exposure in other areas of ophthalmology. There was a deficiency of subspecialty supportive services in most medical colleges. There were no retina service (28/59), cornea service (25/59), pediatric ophthalmology service (46/59), and oculoplastics service (46/59) in most of the institutions. There was also a lack of infrastructure, trained supportive personnel, and equipments. There were no standardized compulsory rotational postings, and few residents had adequate exposure in this field. This corroborated well with the views of experts in our study.

Strabismology has been recognized as a distinct subspecialty in India for decades, and many tertiary eye hospitals established a strabismus department as early as 1960.^[17] However, such departments cater to patients across all age groups. Only recently, institutions, such as Aravind Eye Care System, Sankara Netralaya, and L. V. Prasad Eye Institute, are recognized as pediatric ophthalmology learning and training centers (POLTC) and have formalized fellowship programs in pediatric ophthalmology. The POLT project was an initiative by ORBIS International, an international nongovernmental organization, toward the development of comprehensive pediatric eye care teams and the establishment of 50 centers by 2010 in the country. More ophthalmologists are now opting for pediatric ophthalmology fellowship training because of this program.

To our knowledge, this is the first survey of its kind to evaluate the ophthalmology residents’ perceptions of POS subspecialty in India. Results of the present survey of the residents revealed several key issues that could enhance the interest in POS subspecialty if addressed correctly. Review of literature showed that decision to pursue subspecialty training is usually made during their PG residency training itself. A study by Gedde *et al.*^[18] reported that the factors influencing the residents to enter glaucoma fellowship included a desire to acquire special skills, rotation postings during their graduation period, availability of role models/mentors, continuity of care, and challenging diagnostic problems. Hasan *et al.*^[9] conducted a survey among US fellows to understand their attitude toward POS. Their study reported 74% of the residents had a clinical role model, 67% liked strabismus, and 66% perceived a good market job, yet only 7% wanted to pursue POS fellowship training. Most of the residents in our study had shown a liking for strabismus, but only 27% enjoyed POS clinics. Inadequate exposure, hard work, difficulty in examining children, and incompetent surgical skill development have dissuaded them from taking up this subspecialty. The authors cross-checked before writing this paper, and only 2% out of 21% of those who had shown some interest in undertaking POS had actually enrolled in a POS fellowship. To remove the fear factor among students, efforts are required to enhance the teaching and mentoring skills of faculty with consequent significant investment in the faculty development workshops. The use of teaching tracks for academic advancement and rewarding excellence in teaching and mentoring can accomplish this.^[19] Restructuring the curriculum and enhancing the rotation posting will generate some interest in this field. At the policy level, introducing a preferred practice pattern, monitoring of structured residency training, and standardization of the exit examination might also accomplish this.

Mentorship was found to be an important factor in a study by West *et al.*,^[20] who surveyed the 3rd year PG residents and asked them to rate the importance of several factors in choosing their careers, consistent with the existing literature showing that mentorship is critical for stimulating interest in a particular field. Although mentorship clearly has an important role in career choices made by medical students and residents, unfortunately, 32% of our respondents say they did not have a role model or mentor to guide them in pursuing POS fellowship while 38% were neutral in their response. The study by Thakur *et al.*^[21] reported most surgical residents chose the same career as their mentor, attributing to the positive counseling and impact of role models. Thus, efforts will have to be made to promote faculty development workshops and retain more POS trained ophthalmologist in government medical colleges. Organizing lectures, video conferences, wet laboratories, and clinical workshops will stimulate resident doctor's interest and connect them with their role models. Attending conferences and presenting research papers can also be encouraged to motivate resident doctors early during their careers to arouse their intellectual curiosity in this field. These efforts can be made at individual, regional, and national level with respect to resident courses, mentorship, and research programs. The International Council of Ophthalmology, Academic Research Committee of All India Ophthalmology Society, and ORBIS International are potential organizations which can play a significant role of workforce and infrastructure development.

Lifestyle and work-life balance are other important factors in career decisions among residents. Finally, financial aspects do play a major deciding factor. Respondents in our survey claimed not to be influenced by monetary issues unlike the study by Hasan *et al.*^[9] where the residents did not want to pursue POS subspecialty because of low income and remuneration. This suggests that most respondents either did not perceive POS to be low paying or did not give much weightage to this factor in our study.

The study only captured the views of the trainee doctors. These can change once they actually start practicing. Hence, future studies should try to understand the barriers and preferences of practicing doctors as well. Besides, our study could cover resident doctors from the eastern part of India. Thus, stakeholder analysis from other parts might contribute more toward getting a clearer picture throughout the country.

Conclusions

Despite these limitations, the study has provided useful insights into the preferential behavior of the trainee resident doctors and their reasons for not opting for POS as a possible choice of future fellowships. The views of experts, who have had years of experience, has immensely contributed to laying the foundations for future studies to generate more evidence and influence policy decisions that can favor the growth of POS subspecialty in India.

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Conflicts of interest

There are no conflicts of interest.

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